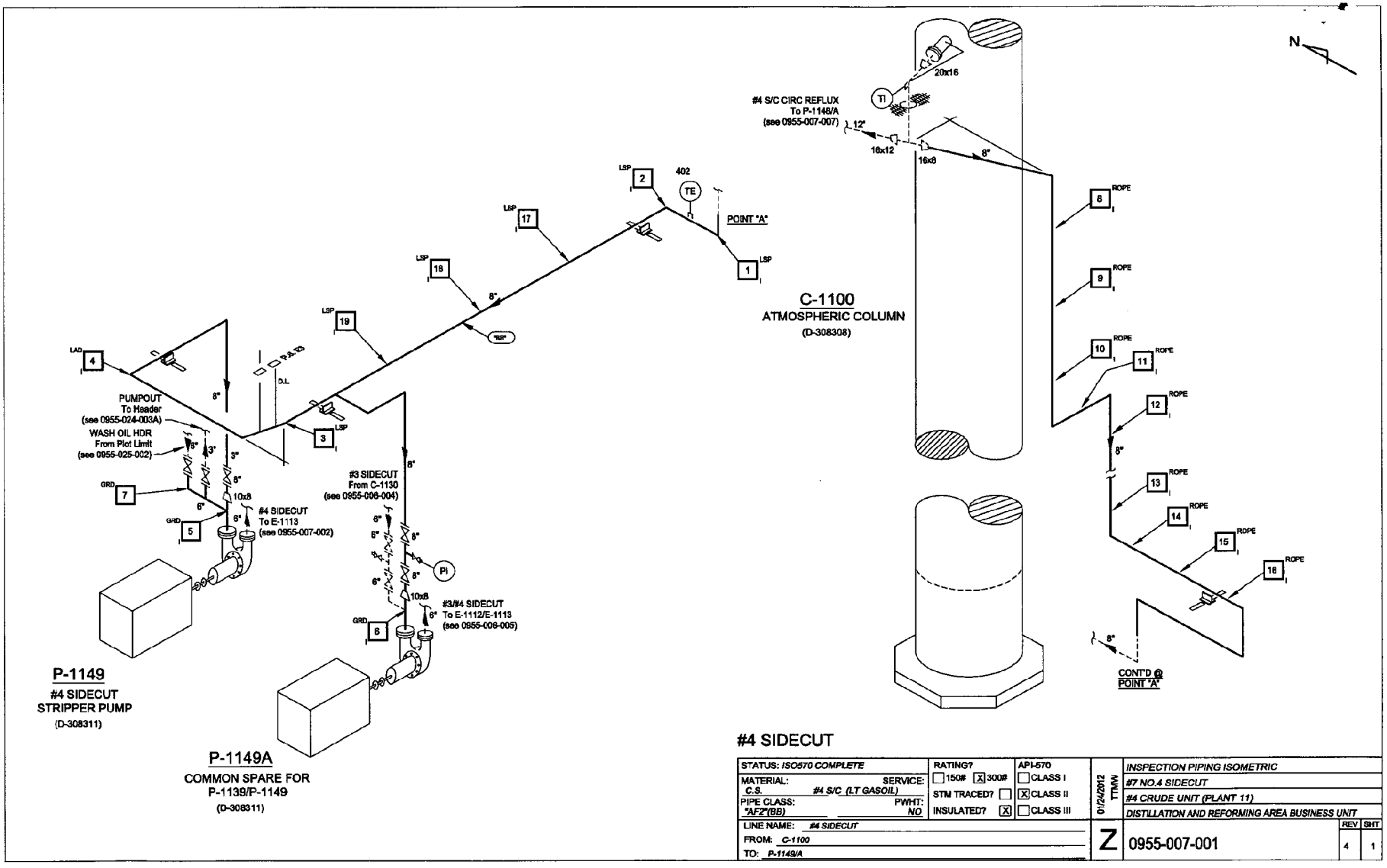
Corrosion Report

Chevron

Equipment Location ID 0955-007-001
Equip. Location Descrip. C-1100 NO. 4 SIDECUT OUTLET

Remaining Life (Years) 3.31
Retirement Date 05/30/2015
Last Inspection Date 02/06/2012
Next Inspection Date 10/02/2013
Current Corrosion Rate 39.27

DP ID	MEAS METH	DP STAT	DP SZ	DT TYPE	BASE	MEAS 5	MEAS 4	MEAS 3	NEAR	LAST	MIN VALUE	CCR	REM LIFE
003.R	RT	A	8.00	ELL	0.270 04/88		0.280 04/95	0.270 05/98	0.280 04/01	0.180 02/12	0.100	9.22	8.68
004.R	RT	A	8.00	ELL	0.290 11/77	0.310 04/88	0.310 04/95	0.290 05/98	0.320 04/01	0.220 02/12	0.100	9.22	13.02
005.R	RT	A	10.00	PIPE	0.170 02/12						0.140	5.00	6.00
006.R	RT	A	10.00	PIPE	0.350 11/77	0.330 05/92	0.320 05/98	0.340 04/00	0.340 04/01	0.270 02/12	0.140	6.45	20.15
007.R	RT	A	10.00	ELL	0.210 02/12						0.140	5.00	14.00
008.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.322 10/02	0.170 02/12	0.100	16.29	4.30
009.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.200 11/11	0.260 02/12	0.100	1.72	93.13
010.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.240 11/11	0.240 02/12	0.100	2.27	61.62
011.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.190 11/11	0.290 02/12	0.140	0.89	169.30
012.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.290 11/11	0.350 02/12	0.140	0.00	∞
013.R	RT	A	8.00	PIPE	0.322 01/76			0.322 10/02	0.280 11/11	0.270 02/12	0.140	39.27	3.31
014.R	RT	A	8.00	PIPE	0.270 02/12						0.140	5.00	26.00
015.R	RT	A	8.00	PIPE	0.270 02/12						0.140	5.00	26.00
016.R	RT	A	8.00	PIPE	0.290 02/12						0.140	5.00	30.00
017.R	RT	A	8.00	PIPE	0.210 02/12						0.140	5.00	14.00
018.R	RT	A	8.00	PIPE	0.200 02/12						0.140	5.00	12.00
019.R	RT	A	8.00	PIPE	0.180 02/12						0.140	5.00	8.00


N
20x16
#4 S/C CIRC REFLUX
To P-1148/A
(see 0955-007-007)
12"
16x12
16x8
8"
TI
TE
402
POINT "A"
LSP
ROPE
C-1100
ATMOSPHERIC COLUMN
(D-308308)
PUMPOUT
To Header
(see 0955-024-003A)
WASH OIL HDR
From Plot Limit
(see 0955-025-002)
#4 SIDECUT
To E-1113
(see 0955-007-002)
#3 SIDECUT
From C-1130
(see 0955-006-004)
#3/#4 SIDECUT
To E-1112/E-1113
(see 0955-006-005)
10x8
GRD
LAD
P-1149
#4 SIDECUT
STRIPPER PUMP
(D-308311)
P-1149A
COMMON SPARE FOR
P-1139/P-1149
(D-308311)
CONT'D @
POINT "A"
#4 SIDECUT
STATUS: ISO570 COMPLETE
MATERIAL: C.S.
SERVICE: #4 S/C (LT GASOIL)
PIPE CLASS: "AF2"(BB)
PWHT: NO
RATING? 150# 300#
STM TRACED?
INSULATED?
API-570 CLASS I CLASS II CLASS III
01/24/2012 TMW
INSPECTION PIPING ISOMETRIC
#7 NO.4 SIDECUT
#4 CRUDE UNIT (PLANT 11)
DISTILLATION AND REFORMING AREA BUSINESS UNIT
LINE NAME: #4 SIDECUT
FROM: C-1100
TO: P-1149/A
Z
0955-007-001
REV 4
SHT 1

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 Data Source: Meridium

Brief Data:

Date Not Available:	11/5/2011	**Date Available:**	11/05/2011
History Brief Date:	10/20/2011	**History Brief ID:**	VI-1110247836
Event Type:	Inspection	**In- Service Date:**	11/05/2011
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	10/20/2011
Asset Type:	221	**Inspe tion Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	API 570 inspection		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Corrosion	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	TBEA
Save:		**Inspected By:**	TBEA

Findings:

PCA ID:	PCA-002064093	**Condition:**	
Inspectable:	GENERAL	**Action:**	
Sub Item:		**Location:**	
Part:		**Damage Mechanism:**	
Discussion:		**PCA Work Order No :**	

Reliability Comments:

Information
Piping circuit inspected for sulfidation corrosion.
Corrosion rate at TML 9E is based using the nominal thickness in 2002. long term corrosion rate provides a RL of 11 years with a half life inspection during the 2016 S/D.
corrosion rate at TML 11B is based on a nominal thickness in 2002 long term corrosion rate provides a remaining life of 11 years with a half life inspection during 2016 S/D.

calculated T-min provided by DED

For the P-1149 suction piping t(min):
1. 8 inch pipe:
a. Pressure t(min) = 0.018 inch
b. Structural t(min) = 0.036 inch
2. 10 inch pipe:
a. Pressure t(min) = 0.022 inch
b. Structural t(min) = 0.036 inch

So, I would use the 0.036 inch as the ultimate t(min) for this section of pipe. If piping get below 0.100 inches, we should consider some sort of clamp or wrap. After talking to inspections, this might also be a good location for a corrosion probe.

Hope this helps,

If you have any questions, please do not hesitate to contact me.

Thanks for the help,
Patrick Murphy

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 Data Source: Meridium

Brief Data:

Date Not Available:	8/22/2007	**Date Available:**	08/22/2007
History Brief Date:	04/10/2012	**History Brief ID:**	VI-1204254535
Event Type:	Inspection	**In- Service Date:**	08/22/2007
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	08/22/2007
Asset Type:	221	**Inspection Type:**	EVI
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	RFMS CUI Project		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Corrosion	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	CSAA
Save:		**Inspected By:**	CSAA

Findings:

PCA ID:	**Condition:**
Inspectable:	**Action:**
Sub Item:	**Location:**
Part:	**Damage Mechanism:**
Discussion:	**PCA Work Order No :**

Reliability Comments:

DELUGE AREA? Cooling Tower? Moderate CUI noted. RT 2 locations.

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 | Data Source: Meridium

Brief Data:

Date Not Available:	10/15/2002	**Date Available:**	
History Brief Date:	10/15/2002	**History Brief ID:**	HB-0210080308
Event Type:	Inspection	**In- Service Date:**	
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	
Asset Type:	221	**Inspection Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	Piping u/s & d/s Of TML's RT'd For Hot H2S Corr, 1 Ell Corr, Scale Noted		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Information	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	JMJG
Save:		**Inspected By:**	

Findings:

PCA ID:	PCA-002021753	**Condition:**	
Inspectable:	GENERAL	**Action:**	Not Resolved
Sub Item:		**Location:**	
Part:	PIPE WALL	**Damage Mechanism:**	1
Discussion:		**PCA Work Order No :**	

Reliability Comments:

The straight run piping on the existing (mostly ells) TMLs was RT'd to look for hot H2S corrosion. The corrosion can occur on CS piping above 550 deg F (this line runs up to above 600 deg F). Only one section of piping (downstream of TML # 3) had internal corrosion and pitting, the piping has lost approximately 1/3 of it's original wall thickness (nominal is 0.322 for 8" Sch 40 piping). The 6" suction header branch connection has ~ 2" of scale on the bottom below the 3" pump-out piping connection. Due to the corroded ell found and the service conditions, the piping will be recommended for replacement during the next scheduled shutdown. -jmg 10/15/2002 4:13:18 PM

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 Data Source: Meridium

Brief Data:

Date Not Available:	5/22/1998	**Date Available:**	05/22/1998
History Brief Date:	05/22/1998	**History Brief ID:**	RPR-2023858
Event Type:	Information	**In- Service Date:**	05/22/1998
Equipment ID:	0955-007-001	**Critical:**	
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	
Asset Type:	221	**Inspection Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	98 OSI INSP		

Reliability Analysis:

Event Type:	Information	**Worked Performed By:**	Chevron - General
Cause Category:	Information	**Program Status:**	
Effect Category:	Information	**Maintainable Item:**	Other
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	DANM
Save:		**Inspected By:**	

Findings:

PCA ID:	**Condition:**
Inspectable:	**Action:**
Sub Item:	**Location:**
Part:	**Damage Mechanism:**
Discussion:	**PCA Work Order No :**

Reliability Comments:

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 | Data Source: Meridium

Brief Data:

Date Not Available:	11/5/2011	**Date Available:**	11/05/2011
History Brief Date:	10/20/2011	**History Brief ID:**	VI-1110247836
Event Type:	Inspection	**In- Service Date:**	11/05/2011
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	10/20/2011
Asset Type:	221	**Inspe tion Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	API 570 inspection		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Corrosion	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	TBEA
Save:		**Inspected By:**	TBEA

Findings:

PCA ID:	PCA-002064093	**Condition:**	
Inspectable:	GENERAL	**Action:**	
Sub Item:		**Location:**	
Part:		**Damage Mechanism:**	
Discussion:		**PCA Work Order No :**	

Reliability Comments:

Information
Piping circuit inspected for sulfidation corrosion.
Corrosion rate at TML 9E is based using the nominal thickness in 2002. long term corrosion rate provides a RL of 11 years with a half life inspection during the 2016 S/D.
corrosion rate at TML 11B is based on a nominal thickness in 2002 long term corrosion rate provides a remaining life of 11 years with a half life inspection during 2016 S/D.

calculated T-min provided by DED

For the P-1149 suction piping t(min):
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b. Structural t(min) = 0.036 inch
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So, I would use the 0.036 inch as the ultimate t(min) for this section of pipe. If piping get below 0.100 inches, we should consider some sort of clamp or wrap. After talking to inspections, this might also be a good location for a corrosion probe.

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For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 | Data Source: Meridium

Brief Data:

Date Not Available:	8/22/2007	**Date Available:**	08/22/2007
History Brief Date:	04/10/2012	**History Brief ID:**	VI-1204254535
Event Type:	Inspection	**In- Service Date:**	08/22/2007
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	08/22/2007
Asset Type:	221	**Inspection Type:**	EVI
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	RFMS CUI Project		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Corrosion	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	CSAA
Save:		**Inspected By:**	CSAA

Findings:

PCA ID:	**Condition:**
Inspectable:	**Action:**
Sub Item:	**Location:**
Part:	**Damage Mechanism:**
Discussion:	**PCA Work Order No :**

Reliability Comments:

DELUGE AREA? Cooling Tower? Moderate CUI noted. RT 2 locations.

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 Data Source: Meridium

Brief Data:

Date Not Available:	10/15/2002	**Date Available:**	
History Brief Date:	10/15/2002	**History Brief ID:**	HB-0210080308
Event Type:	Inspection	**In- Service Date:**	
Equipment ID:	0955-007-001	**Critical:**	L
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	
Asset Type:	221	**Inspection Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	Piping u/s & d/s Of TML's RT'd For Hot H2S Corr, 1 Ell Corr, Scale Noted		

Reliability Analysis:

Event Type:	Inspection	**Worked Performed By:**	Chevron Reliability
Cause Category:	Information	**Program Status:**	
Effect Category:	Information	**Maintainable Item:**	Pipe Wall
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	JMJG
Save:		**Inspected By:**	

Findings:

PCA ID:	PCA-002021753	**Condition:**	
Inspectable:	GENERAL	**Action:**	Not Resolved
Sub Item:		**Location:**	
Part:	PIPE WALL	**Damage Mechanism:**	1
Discussion:		**PCA Work Order No :**	

Reliability Comments:

The straight run piping on the existing (mostly ells) TMLs was RT'd to look for hot H2S corrosion. The corrosion can occur on CS piping above 550 deg F (this line runs up to above 600 deg F). Only one section of piping (downstream of TML # 3) had internal corrosion and pitting, the piping has lost approximately 1/3 of it's original wall thickness (nominal is 0.322 for 8" Sch 40 piping). The 6" suction header branch connection has ~ 2" of scale on the bottom below the 3" pump-out piping connection. Due to the corroded ell found and the service conditions, the piping will be recommended for replacement during the next scheduled shutdown. -jmg 10/15/2002 4:13:18 PM

History Brief

For Location ID: 0955-007-001 in Unit: 0955

Report Date: August 15, 2012 Data Source: Meridium

Brief Data:

Date Not Available:	5/22/1998	**Date Available:**	05/22/1998
History Brief Date:	05/22/1998	**History Brief ID:**	RPR-2023858
Event Type:	Information	**In- Service Date:**	05/22/1998
Equipment ID:	0955-007-001	**Critical:**	
Asset ID:	0000110906	**Reference Material:**	
Work Order Nbr:		**Incident Event ID:**	
History Type:	FXD	**Inspection Date:**	
Asset Type:	221	**Inspection Type:**	
Cost Center:	K.DCRRI00281		
Unit:	0955 - 4 CRUDE UNIT PLT 11		
Headline:	98 OSI INSP		

Reliability Analysis:

Event Type:	Information	**Worked Performed By:**	Chevron - General
Cause Category:	Information	**Program Status:**	
Effect Category:	Information	**Maintainable Item:**	Other
Repair Location:		**Permanent Repair WO:**	
Temporary Repair:		**Name:**	DANM
Save:		**Inspected By:**	

Findings:

PCA ID:	**Condition:**
Inspectable:	**Action:**
Sub Item:	**Location:**
Part:	**Damage Mechanism:**
Discussion:	**PCA Work Order No :**

Reliability Comments: